

REMARKS

Claim Rejections Under 35 U.S.C. 102

Claims 1, 2, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi et al. (U.S. Pat. No. 5,369,301).

The rejection of claim 1 on Hayashi is traversed.

Regarding amended Claim 1, applicant submits Hayashi fails to disclose each and every limitation of amended Claim 1 of the present application. Amended Claim 1 states “the base plate having a bottom face being directly positioned on the housing...” Hayashi fails to disclose how to mount the heat distributor to an electrical connector. Further, amended Claim 1 recites “an electrical connector having an insulation housing defining cells that receive and retain therein conductive contacts.....wherein the pins are arranged in accordance with the cells and are inserted into the cells to physically engage the contacts ...”. Hayashi does not disclose this limitation either. Therefore, it is respectfully submitted that Hayashi fails to disclose all the limitations of amended Claim 1.

Further, the novel limitations of amended Claim 1 provide homogenous heat transfer to/from the soldering material of the contacts and thereby eliminate heat differences between the soldering material of the contacts. Hayashi fails to disclose or suggest these advantages. Rather, Hayashi is directed to a high pin number, high performance heat sink and a method of manufacturing same. Applicant asserts that amended Claim 1 is unobvious under section 103 in light of Hayashi, and further in light of applicant’s disclosed prior art art34 and Suehiro et al. Applicant refers to his detailed traverse below regarding rejected Claims 7 and 8, with due alteration of details. Accordingly, applicant requests that the rejection of amended Claim 1 should now be removed, and that the claim be allowed.

Claims 2, 5 and 6, which are all dependent on Claim 1, should accordingly now also be allowed.

Claim Rejections Under 35 USC 103(a)

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's disclosed prior art art34, and further in view of Hayashi et al. (U.S. Pat. No. 5,369,301) and Suehiro et al. (Japanese Patent No. JP405299832A).

Applicant has canceled Claims 7 and 8 without prejudice, and added a new Claim 10 to patentably define over these references, and any combination thereof. Applicant requests reconsideration of the rejections for the following reasons:

- (1) There is no suggestion, in art34, Hayashi or Suehiro that these references be combined, much less combined in the manner stated.
- (2) Even if art34, Hayashi and Suehiro were to be combined in the manner stated, the stated combination would not show the novel physical feature of Claim 10.
- (3) The novel physical feature of Claim 10 produces new and unexpected results that render the claim unobvious and patentable over these references under 35 U.S.C. 103(a).

The References And Differences Of The Present Invention Thereover

Prior to discussing the claim and the above three points, applicant will first discuss the references and the general novelty of the present invention and its unobviousness over the references.

art34 discloses a circuit board with conductive traces formed thereon; an electrical connector comprising an insulation portion and conductive members retained in the insulation portion, each conductive member comprising a tail section corresponding to one of the conductive traces of the circuit board; and soldering pre-forms arranged between the conductive

traces and the tail sections of the conductive members. However, as Examiner stated in the Office action, art34 fails to disclose a heat distributor attached to the connector and comprising conductive pins thermally engaging the conductive members of the connector so as to uniformly transfer heat to/from the soldering pre-forms. That is, art34 fails to disclose the relationship between the connector and the heat distributor as recited in Claim 10.

Hayashi discloses a heat distributor with base plate made of thermally conductive material, the base plate having a bottom face and an opposite face; and a plurality of thermally conductive pins extending from the bottom face of the base plate (Hayashi, Figure 1a). However, Hayashi fails to disclose or suggest how to mount the heat distributor on an electrical connector. In other words, Hayashi also fails to disclose the relationship between the connector and the heat distributor, as recited in Claim 10.

Suehiro discloses that the pin is arranged in accordance with the corresponding cell and is insertable into the cell to physically engage the contact for transferring heat to the contact and to melt the soldering material, as shown in Figure 1 thereof. However, Suehiro fails to disclose or suggest the detailed structure of the heat distributor as recited in Claim 10.

As regards the relationship between the heat distributor and the electrical connector, Claim 10 recites “a heat distributor attached to the connector and comprising a base plate and conductive pins extending from the base plate toward the housing, the pins thermally engaging the conductive members of the connector and creating a homogenous heat transfer to/from the soldering pre-forms to thereby eliminate heat differences between the soldering pre-forms, the base plate defining a surface area no greater than the top surface of the connector housing ...”

Those skilled in the art would find it physically impossible to combine the references in the manner suggested. That is, applicant’s relationship between the heat distributor and the electrical connector is unique and

created for the first time. There is nothing in the prior art indicating or suggesting applicant's relationship, much less actually disclosing it. Using applicant's novel relationship, homogenous heat is able to transfer to/from the soldering pre-forms, to thereby eliminate heat differences between the soldering pre-forms so as to prevent heat stress from spreading among the soldering pre-forms during the heating process.

Thus, applicant's electrical connector system has not hitherto been accomplished, its concomitant advantages being neither known nor appreciable to one of ordinary skill in the art.

1. This is no suggestion in art34, Hayashi or Suehiro that these references be combined, much less combined in the manner stated.

With regard to the stated combination of art34, Hayashi and Suehiro, it is well known that in order for any prior art references themselves to be validly combined for use in a prior art section 103 rejection, the reference themselves must suggest that they be combined. For instance, as was stated in In re Sernaker, 217 U.S.P.Q. 1, 6 (C.A.F.C. 1983):

“Prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings.”

That the suggestion to combine the references should not come from the applicant's own invention was forcefully stated in Orthopedic Equipment Co. v. United States, 217 U.S.P.Q. 193, 199 (C.A.F.C. 1983):

“It is wrong to use the patent in suit [i.e. here, the patent application] as a guide through the maze of prior art references, combining the right references in the right way to achieve the result of the claims in suit [i.e. here, the pending claims]. Monday morning quarterbacking is quite improper when resolving the question of nonobviousness in a court of law [i.e. here, the PTO].”

Further, as was stated in Uniroyal Inc. v. Rudkin-Wiley Corp., 5 U.S.P.Q. 2d 1434 (C.A.F.C. 1988):

“where prior-art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. ... Something in the prior art must suggest the desirability and thus the obviousness of making the combination.”

In line with these decisions, the Board of Patent Appeals and Interferences in Ex parte Levengood, 28 U.S.P.Q. 2d 1300 (P.T.O.B.A.&I. 1993) recently stated:

“In order to establish a prima facie case of obviousness, it is necessary for the examiner to present evidence, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art, or in the form of generally available knowledge, that one having ordinary skill in the art would have been led to combine the relevant teachings of the applied references in the proposed manner to arrive at the claimed invention. ... That which is within the capabilities of one skilled in the art is not synonymous with obviousness. ... Accordingly, an examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant’s invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.”

In the present case, the only reason provided to support the stated combination is that “it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the heat distributor of Hayashi or Suehiro for the apparent reason of transferring the heat to the solder material.” Applicant asserts that it is not sufficient to merely selectively substitute part of a reference (the pins of Suehiro) for part of another reference (the heat distributor of Hayashi) to then

combine with still another reference (art34) so as to arrive at applicant's claimed invention.

The Office action notes (p. 2) that the combination of art34, Hayashi and Suehiro produces an advantage (transferring the heat to the solder material). Applicant submits that the fact that the combination produces an advantage militates in favor of the present application, since it indicates that the combination produces new and unexpected results and hence is unobvious. Additionally, the advantages of applicant's invention are not only that it is able to transfer the heat to the solder material, but also to uniformly transfer the heat to the solder material and to uniformly transfer the heat from the solder material.

In summary, applicant submits that combining art34, Hayashi and Suehiro in the manner stated is improper. The rejection based on the combination of these references is improper and should be withdrawn.

2. Even if art34, Hayashi and Suehiro were to be combined in the manner stated, the stated combination would not show the novel physical feature of Claim 10.

Even if the combination of art34, Hayashi and Suehiro is proper, applicant submits that Claim 10 still has at least one novel unobvious physical feature over the stated combination. That is, applicant's invention as defined in Claim 10 recites "the base plate defining a surface area no greater than the top surface of the connector housing."

Art34, Hayashi and Suehiro all fail to disclose this feature. Claim 10 clearly distinguishes applicant's electrical connector system from art34, Hayashi and Suehiro, and any combination thereof. Thus applicant submits that his invention is more than the mere stated combination.

3. The novel physical feature of claim 10 produces new and unexpected results and hence renders the claim unobvious and

patentable over art34, Hayashi and Suehiro under 35 U.S.C. 103(b).

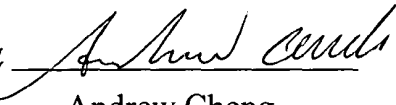
Applicant submits that the novel physical feature of Claim 10 is also unobvious and hence patentable under section 103, since it produces new and unexpected results over these references and any combination thereof.

The new and unexpected results are the ability of applicant's electrical connector system to locate the heat distributor at a central area of the top surface of the connector housing. The heat distributor thereby transfers heat to the solder balls corresponding to the contacts located in the central area of the connector housing, as clearly indicated in paragraph [0041] of the present application. These results are of very substantial benefit to the electrical connector system.

Conclusion

For all the above reasons, applicant asserts that all the pending claims are now in proper form and are patentably distinguishable over the prior art. Therefore applicant submits that this application is now in condition for allowance, and an action to this effect is earnestly requested.

Respectfully submitted,

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